Catchment Water Use

A snapshot of the Goulburn Broken Catchment economy and ecology produced by linking the regional economic structure with water use and the generation of stream nutrient pollution.

Summary

The regional economy and wealth of the Goulburn Broken catchment depends on water of the quality and quantity required for a range of agricultural and domestic users. Catchment ecosystems provide the services that regulate water quality and quantity, and are therefore very important to the catchment community.

How much can the value of production grow given the current water use? What is the consequence on water use and nutrient export if the dollar value of production from an industry sector/s change? What is the impact on employment of switching water use into industries that produce a high dollar value per unit of water?

To answer these questions this Ecosystem Service project produced a model linking the structure of the regional catchment economy with the use of water.

Background

With the Goulburn Broken Regional Catchment Strategy as a guiding principle, rural landholders, in partnership with government, are currently investing 30 to 40 million dollars per year enhancing farm infrastructure, particularly in the Shepparton Irrigation region. These investments aim to achieve increased production and better protection against land and water degradation, mainly through improved water use efficiency.

To help prioritise such investments in agricultural and other industries, CSIRO has developed a model of how different parts of the catchment community use water. This economic analytical framework tracks water use in terms of economic output amongst other factors. Called an input-output model, it can identify alternative ways of structuring the economy that maximise the region's economic output while preserving or enhancing water resources. Scenarios of future catchment objectives can be tested. For example, capping stream nutrient pollution and/or maximising employment.

Project components

The project had three major components.

Firstly, an input-output framework was constructed of the regional economy using statistical data for 2001.

Secondly, this framework was extended to include connections between the economy and the environment. This was achieved with water use data derived from the Farm Irrigation Survey of 2000/2001 and stream nutrient pollution derived from an inventory of typical total phosphorus (P) and nitrogen (N) losses across the catchment.

Thirdly, workshops were run to assess the quality of the economic and biophysical data and to capture stakeholder views of how the model could be applied to natural resource management in the Goulburn Broken catchment.

Project **outputs** include:

- a model that tracks the movement of dollars, water and nutrients among 33 different industry sectors of the catchment economy.

Key **observations** from the workshop and analysis are:

- the dairy processing sector has the highest dollar return for each dollar input;
- A horticultural sector had the highest increase in demand for water in response to an increase of one dollar in demand for its products;
- the modelling framework allows simultaneous evaluation of investments in regulation of groundwater levels and river flows, maintenance of stream health, and the importance of industries in the catchment and
- the environmentally extended input-output analysis is an insightful tool that can provide solid underpinning for policy decisions.

Key **considerations** are:

- Accurate, consistent and recent data are essential to reflect the current state and future options of the catchment.

Contact us

If you would like more information please contact:

Roel Plant

Phone: (02) 62421613

Email: Roel.Plant@csiro.au

Mailing Address:

CSIRO Sustainable Ecosystems

GPO Box 284

Canberra, ACT 2601

Or visit us at: www.ecosystemservicesproject.org

Summary results for three different economic growth scenarios.

	Current output level	Worst-case economic growth	Best-case economic growth	Maximum output with current water use
Output [$ M]	8,709	9,219	10,655	10,046
Income [$ M]	1,117	1,182	1,350	1,275
Employment [jobs]	80,446	80,684	100,543	95,971
Water use [GL]	1,506	1,454	1,758	1,506
P-pollution [tonnes]	1,404	1,409	1,623	1,444
N-pollution [tonnes]	2,503	2,500	2,882	2,577